

File:Pike.1

Notes on conversation with John Pike, FAS, January 24, 1986
February 1, 1986

1. Q: Do the Soviets have an infrared warning satellite comparable to ours? A: They do have an infrared warning system, though they are thought to be about ten years behind us in this technology. According to "unclassified folklore," their sensors are less sensitive, more subject to false alarms, with less ability to track. Thus, it is harder for them to count or track separate plumes. Their system is suited for early warning, but not raid analysis. (All this strengthens my point below; it makes it less likely than otherwise that they could discriminate between the launch of pop-up X-ray lasers (XRLs) and the launch of offensive missiles.)

2. I laid out my analysis of the instabilities connected with the pop-up XRL concept. (See file:Pike). Pike's response was: "Welcome to the club!" Meaning, he said, that he had thought of such implications before. Moreover, it was his impression that these problems had been recognized in classified discussions. However, he said that he had not written on any of this himself, nor had he seen it referred to at all--"except for a line or two here and there"--in the open discussion.

He felt that this would be an important article, which I should write. He thought that an op-ed piece would not provide enough space, nor would a letter (e.g. to Science), since he thought it should be spelled out thoroughly, and put in the context of a larger analysis. (The larger context could be, for example, a discussion of the point I raised in my trial in Beatty: "Ronald Reagan, who likes to delegate, is probably not aware that nearly every strategic program he is promoting will encourage one or both sides to delegate the decision to launch World War III to an electronic computer." This referred, in my mind, to Pershing II, MX, ASAT, and Trident II. But it definitely includes the SDI, and specifically the X-Ray laser.)

Pike thought that even the Bulletin of Atomic Scientists would not provide enough space; better would be Foreign Policy, International Security. He suggested that I run a draft by him.

3. Similar problems arose with ground-based interceptors in the U.S. (For boost phase? Does this refer to non-XRL lasers using space-based mirrors??)

4. XRLs have at least three uses, of which boost-phase intercept is actually the least promising. The others are:

a) ASAT, and defense suppression. (I presume the ASAT role could be done either from the ground or space.)

b) interaction with mid-course objects: "popping balloons." "XRL has great potential for mid-course discrimination--popping balloons." (Again: from the ground? Or

also from space? And what would then be the kill mechanism for the warheads, once the balloons have been popped?)

c) boost-phase intercept. Liquid-fueled SU ICBMs with 300 second boost phase are somewhat vulnerable to this; but solid-fuel missiles, with 180 second burn time are less so, and fast-boost rockets (maybe 40 seconds, according to the Soviets) not at all.

5. How many targets could a single XRL (nuclear burst) seek to destroy? Where the public literature mainly suggests "many," one for each of the lasing rods, Kosta Tsipis asserted "only one," since it would be necessary to point many rods, a whole bundle, at a single booster in order to get a kill. Pike says: This is unclear, in open discussion; and probably there is still great uncertainty about it, reflecting uncertainty on the brightness and focussing, etc. of the laser. (As well, I suppose, as uncertainties about the problem of independent pointing of the rods?)

6. I suggested that the launching of a single XRL would give away the position of the submarine. The discussion in Broad suggests that Trident subs would be used; presumably they would also have offensive missiles (Trident II) on them as well. Thus they would have an incentive to launch these missiles, for damage-limiting purposes and so as to "use them before losing them," as soon as the XRLs were launched (which might mean, automatically, on the basis of a false alarm).

But Pike thought it unlikely that Tridents would be used, since the rockets for launching XRLs would be smaller than offensive missiles. It would be desirable to use smaller subs, or else refit Tridents to allow more tubes; probably the sub would have only XRLs. (This doesn't seem inevitable, though). A new sub, "George Washington type" might be developed.

7. Another way in which SDI would introduce instabilities of the sort I conjectured would be with "mistaken" activation of "shoot-back" systems, i.e., active defenses of the space-based defenses themselves.

Such problems would be multiplied if and when the Soviets introduced similar systems themselves. One side going on a higher state of alert--based either on "strategic warning" (or in order to "send a signal," as alerts were used in the past, e.g. 1973) or on warning indications that were possibly erroneous--the other would react automatically. And either the first alert or the response could be misinterpreted by the opponent or its systems, which would be programmed to respond automatically. (Plenty of room here for the operation of the "bugs" that are guaranteed to be numerous on both sides: indeed, for the "mating" of bugs of different species and nationalities!)

8. Pike is concerned about the reduction of stability that will ensue from the interaction of US and SU "macrosystems" (as

the Soviet scientists call them) incorporating both offense and defense. (The Soviet scientists--whose report I did not discuss with Pike--imply that the Soviets will rely on relatively cheap countermeasures rather than imitating an American SDI. This projection is probably unreliable. But even if it is the case, Pike's point below would still be valid; all the more if the Soviets do have a complex SDI integrated with their offenses.)

"These two systems, US and Soviet, will be far more tightly coupled than at present. Now, they are relatively loosely coupled (though there is already, and has been for some time, possibilities for false alarms and for alerts having a "self-confirming" consequence. Khrushchev spoke to JFK about this in the early '60's, referring among other things to the mistaken flyover of Soviet territory by a SAC U2 during the Cuban Missile Crisis. ((And see my story on Cuba II)). a) There is imperfect knowledge of what the other is doing (i.e., only limited data comes in on this, especially in "real-time.") b) Time available for interpretation and response is short, but not as short as it will become. c) There is provision at many levels for human interpretation, participation in decision, possible override.

With these new systems, the time available for response will be so short (especially where there is great reliance on boost-phase and mid-course intercept: as with XRL) that humans will be entirely cut out of the SDI decisions. (And, as both Pike and I argue, this will probably feed into fast, and probably automated, commitment of offensive "damage-limiting" responses as well). Meanwhile, reflecting both "modernized" capabilities and increased pressure on fast response and on damage-limiting, "Each side will be watching the other very closely". I.e., its non-human systems will be doing so ("My machine will call your machine," as they say in Hollywood) as well as human operators--all in "real time" and tied in to both automated and human decision-making geared to extremely fast response (not allowing much time for checking, reflection, consultation, even where humans are part of the process at all.

In effect, the two macro-systems will be observing each other with the super-vigilance, alertness, and readiness to respond of paranoiacs. [Note the point made by the Soviet scientists, too, in the above-mentioned report, "Space-Strike Arms and International Security," Report of the Committee of Soviet Scientists for Peace, Against the Nuclear Threat: The battle management of the SDI must be an "expert system" of "an immense scope, i.e., an artificial-brain system incorporating expert knowledge and assessment of the military-political situation and the possible ways of its development" (Presumably this is in order to set alert levels, or to activate the system.) But "it should be borne in mind that such an expert system, and consequently, the predominant logic of the subsystem of battle management functioning, will be, above all, the produce of the mentality and thinking of the top military leaders and experts in

military-political, strategic, operational and technical problems, who will be directly involved in the work on this system.

"The supporters of the 'strategic defense initiative' are, first of all, such representatives of the military, academic and political circles in the USA who cling to extremely negative, even paranoid, notions of the Soviet Union's intentions and who are overanxious to use military force in conflict situations."

"Since a wide-scale anti-missile system with outer space echelons is most likely to function in maximally autonomous conditions and its principal decisions on its activation and the use of particular types of weapons will be made within a few minutes the above-mentioned characteristics of its artificial brain may play a fatal role in some situations." (p. 34)

In other words, the Soviets believe that such systems require programming for the incorporation into automated decision-making of strategic political factors--"It will be necessary to have as a minimum a reflective model of the perception of the military-political and military-strategic situation by the adversary, and also a model of the adversary's military-political decision-making" (p. 33)--and that this programming will be done in the U.S. by humans who on the whole are advocates of the SDI, i.e., as it happens, humans with the psychology and politics of Lyndon LaRouche.]

9. The Reagan Administration sees the SDI as part of a general enhancement of damage-limiting capability. Thus, it is to be programmed along with and integrated operationally with such damage-limiting functions as preemptive offensive counterforce systems and with strategic anti-submarine warfare.

Ikle, who is the key promoter of all this (along with Perle) has instituted programs for integrating the C3 aspects of damage-limiting in general: the Have-Temp program for offenses and the Master program for defense, both to be integrated together.

Pike's greatest fears relate to the period when the Soviets do the same thing.

10. The Reagan Administration emphasis on SDI reflects the overall interest in damage-limiting. I.e., the main emphasis, so far as the Pentagon is concerned, is not on a "perfect shield that would make nuclear weapons obsolete" but on complementing nuclear offensive systems for purposes of damage-limiting, not only for "insurance" but for enhancing the credibility of first-strike threats: and enhancing the will of future Presidents to make and maintain such threats. (Interest in point defense, purely for enhancing deterrence based on retaliation by land-based systems, is very secondary). These aims are achieved by an SDI of almost whatever level of effectiveness (i.e., in defending territory, not merely point defense).

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The new emphasis on damage-limiting--reflected both in the SDI and in counterforce offensive programs and programs for "decapitating" attacks on Soviet C3, including ASAT--reflects in turn a disillusionment with the potential effectiveness both in warfare and in "nuclear diplomacy" of the concepts of "limited attacks," or of decapitation by itself, that were popular in the Pentagon in the '70's. The notion of selective "coercive" attacks--exemplified by "Nitze's nightmare" of a Soviet aimed only at US ICBMs, avoiding cities and US C3, and neutralizing retaliation by US SLBMs by threatening city-busting attacks with Soviet reserve forces--has been discredited by analyses of the fragility of command and control on both sides and the difficulty of separating military and civilian target systems. Moreover, the Soviets have never shown any belief in the feasibility or sense of such an approach and have made no preparations for it (which would be necessary).

This means not only that it is not to be expected from the Soviets but that it makes little sense for the US (which was clearly Nitze's main interest in it; though projecting it onto the Soviets, against all evidence of their doctrine or preparations, was a useful way to scare the American public and elites into financing a buildup intended to implement this strategy, as a threat of US preemption, on the US side.

If, then, the threat of US preemption (or escalation to a first-strike) is to be maintained, it cannot be on preparations for or threats of "clever" coercive attacks that rely for damage-limiting on "intra-war deterrence" by US reserve forces. Moreover, Pike says, there was in the '70's actually some hope that decapitation could do the damage-limiting job by itself; i.e., that it might totally paralyze response. (This seems to be held out as a possibility by Blair, in "Strategic Command and Control." Does he really believe this?) But there is now despair on this point.

Schlesinger, under Nixon and Ford, and then the Carter people (among whom Schlesinger was still represented, in DOE) tried to regain escalation dominance by planning limited attacks, and by flexible targetting, along with decapitation. This was reflected in NSDM-242 and PD-59, with menus of selective target systems. Schlesinger still believes "war-winning" is "crazy"; but he still, apparently, believes in the usefulness of limited attacks. The Reagan team no longer does so, says Pike.

This leaves "brute force" damage-limiting, fully in line with the approach the JCS and SAC have always favored. (See the comparable position of the JCS on Vietnam, opposing civilian notions of "coercing" Hanoi by gradual pressure and by withheld forces and targets, favoring instead an immediate massive attack on all targets). The role of decapitation, I suspect, would be seen as crucial still, not to paralyze response but to delay it and disorganize it, thus making it much easier, or feasible, to do

the damage-limiting job with counterforce offensive systems and with SDI.

I recall, after all, Andy Marshall's and Bill Kaufmann's notions in 1960 of using such "slow, but accurate" systems as the B-70 as "hunter-killer" agents that would find and destroy Soviet concealed or hardened ICBMs that had not been found or destroyed by US preemptive missile attacks. The "slow but accurate" cruise missiles would seem perfectly suited for such a role today, i.e. as part of a first-strike preemptive attack! Their effectiveness would depend on prior "pin-down" of Soviet missiles by US ICBMs and the effects of "decapitation" attacks on Soviet C3. Many SDI components, including the XRL, would contribute directly to the latter.

I can easily imagine (especially after Pike's exposition above) such thinking in the Pentagon today. (Marshall, after all, is in a key position there now). The B-70 itself is back, in the form of the B-1 and Stealth, along with cruise missiles, both ALCMs, GLCMs and SLCMs. If Soviet decapitation operates on US centralized command before these air-breathing systems reach Soviet territory, presumably they will be prepared to do their damage-limiting hunter-killer work on their own: "Headless Huntsmen."

Whatever the counterforce systems miss, both in their initial attacks and in continuing "war-fighting" attacks, the various layers of the SDI are intended to pick up and destroy. Decapitation will greatly assist this, just as it will crucially assist the ability of counterforce systems to destroy Soviet forces in their "pre-boost" phase. But Pike's point is that (realistic) disillusionment with decapitation as a means for winning the war by paralyzing Soviet retaliation, or by inducing Soviet political leaders to capitulate because they can no longer manage their forces militarily¹ did not lead to giving up the

¹"The theory of victory that was said to be contained in PD-59 revolved around distinguishing the political leadership of Russia as a target from the country's military command and control apparatus. 'We were very clear even in '72 that there were two things--one was control over the forces, and the second was the national leadership,' [Jasper] Welch said of NSDM-242. The changes that PD-59 introduced to the war plan made it possible to carry that distinction much further--even to the point of being able to 'decapitate' the military leadership necessary for the conduct of the war, while at the same time preserving the political leadership needed to surrender. 'The decision on what to go after would be decided by the sort of war,' Welch confirmed. 'Sometimes it would be the political leadership; sometimes the military leadership. Sometimes both; sometimes neither.'" Gregg Herken, *Counsels of War*, p. 300.

It is not hard to guess at some investigations that may have led to "disillusionment," as Pike claims. Blair, Ball and Steinbrunner on command and control vulnerability in both the US

notion of war-fighting and war-winning. Rather, these notions are now to be preserved by SDI (and eventually, civil defense). Rather than hoping that some or all of the Soviet forces that survive US preemptive counterforce attack will be withheld, it is now recognized that they will be launched ("raggedly"). But damage-limiting will be achieved by destroying them in the successive phases of their flight; and by passive defenses (fallout shelters, evacuation, even perhaps blast shelters) for population to limit the effects of those that do arrive.

Ultimately, of course, provisions for civil defense must be part of this strategy. The Reagan team has always recognized this, long before coming to office (as did the Committee for Present Danger in general), just as it has always favored ABM and opposed the ABM Treaty (not only for its general arms control effects). But early moves by Reagan to enhance civil defense were costly politically--remember T.K. Jones?--and were rebuffed. They were perhaps the only programs--crisis relocation, stocking of hospitals, and others--that were actually blocked by the antinuclear movement, both local groups and PSR (and likewise in Britain: "Protest and Survive" as the answer to "Protect and Survive"). It is clearly necessary politically to postpone these dispersed measures involving widespread civil government and civilian participation until a later stage: presumably after the SDI is in place. But then it can be expected.

I could never make sense out of the Colin Gray and Carter team apparent notion that decapitation alone could be a basis for damage-limiting or for first-strike threats. How could you be sure that the other side would be totally paralysed? What if they allowed for decentralized execution of retaliation, as we did? And how, then, would the war ever be ended? Wouldn't decapitation simply assure that all the surviving forces on both sides would be fired eventually, probably at cities? These were the challenges I made to the JCS in 1961, when I opposed SAC plans to destroy Moscow with high reliability at the outset of any general war. (Suppose we had used the atom bomb on Tokyo--as Groves wanted to do, both before and after Hiroshima--instead of Hiroshima, or after it, I used to point out to Air Staff officers. There would have been no one to order a Japanese surrender. We would have been fighting Japanese troops for years. Now, in the equivalent situation, those "headless" units would be armed with nuclear weapons.)

But the current answer to this critique of decapitation--or of preemption in general, since decapitation turns out to be almost unavoidable, given the fragility of command and control--is that every effort will be made, with the help of modernized

and SU certainly do not suggest that this sort of brain surgery -- preserving a political nervous system while excising the military one--is really feasible. Moreover, if it were possible, how would the political leaders effectively order the scattered military forces to surrender, once military channels had been destroyed?

counterforce weapons, to destroy the opponent's retaliatory forces, and those that survive these attacks will be destroyed in their boost-phase, mid-course or terminal phase by SDI, both efforts being aided by the initial attacks on Soviet C3. We are to survive and "prevail" without any reliance on Soviet "surrender," which will not be feasible.

It is this concept that accounts for the fact that Reagan, despite his supposed aim of making nuclear weapons obsolete and, by sharing the SDI, will preclude first-strike threats or capability on either side, is in fact programming first-strike and decapitating weapons like mad. (sic). If he were fixed only on the SDI as a grand dream, he could possibly make it acceptable to the Soviets and compatible with arms control agreements, by foregoing his buildup of counterforce offensive forces. (The Soviet scientists indicate this on p. 47 of their report, saying: "all the arguments in favor of the stabilizing role of a large-scale anti-missile system lack physical sense. They might have some weight only if the Reagan administration, simultaneously with taking a decision to launch the SDI program, renounced the buildup and modernization of offensive nuclear forces. What is happening, however, is just the opposite....The assessment of the perspective US anti-missile system as one of the means of providing first-strike capabilities is determined by the fact that the USA is refusing to make the no-first use of nuclear weapons commitment and is building up its first-strike potential."

About a year ago I entertained the thought, tentatively, that--given the near-impossibility of getting Reagan to give up the SDI concept--it might be worthwhile for the Soviets to trade their acceptance of this against a cancellation of the D5 (or preferably, against cancellation of D5, MX and PII, along with, of course, the SS-24 and Soviet D5-type SLBM: essentially, a ban on new MIRVd or forward-based missiles). A premise of this was that the SDI wouldn't work all that well anyway; and that Soviet ability to retaliate to an extent more than adequate for deterrence was assured on the basis of their existing warheads--with no need for an offensive buildup (other than perhaps installation of decoys in existing buses)--so long as these forces would not be diminished by a preemptive strike with the new US counterforce systems.

This thought seems in line with the passage quoted above by the Soviet scientists. However, Chris Paine argued strongly against its practical appeal to the Soviets (as a proposal they might make, or an arrangement they would be prepared to live with). As I remember his argument (this needs rechecking with Paine and Pike), SDI would be unacceptable to them, and would lead to an offensive buildup by them, even if D5 were cancelled, because: a) They would fear that SDI--given the unpredictable "magic" of US technology--might really be very effective against their current forces, without major and expensive modifications and buildup; b) this would especially be true against a ragged retaliation following a US decapitating attack against Soviet

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command and control (which would be possible with current US forces, or even much reduced forces); c) SDI technology would greatly enhance US ability for a decapitating attack, starting with ASAT capabilities.

In this connection the current Congressional ban on ASAT testing (so long as the Soviets do not test) is highly significant, both in preserving the ABM treaty and in demonstrating a surprising Congressional willingness to resist Reagan on his Star Wars objectives.

Pike says that Perle is trying to get the ASAT ban reversed. This would take new affirmative legislation, and is unlikely to occur. ASAT testing, from the ground, at targets, is blocked. (Testing that aims at points in space seems still scheduled). But Perle is still trying hard to get the "broad interpretation" of the ABM Treaty (that effectively nullifies it with respect to Star Wars testing). He is pressing for a test that would clearly violate the Treaty (in its narrow, or correct, interpretation) within the next 18 months. So as to avoid the Congressional restriction, this might take the form of an ASAT vehicle being dumped from a space shuttle, to go after a target in space. (This conversation took place before the loss of a space shuttle, delaying future flights; however, with the pressure to keep the program going, this probably won't be a "fatal" obstacle to Perle's designs.)

Perle's hope--and Pike's expectation--is that by the mid-1990's the US will have restored a strategic asymmetry: the US will have a far greater damage-limiting capability than does the SU. (I'm not sure whether Pike was assuming that some degree of SDI capability would be included in this assessment or not, that soon; he may have been referring to offensive systems only. But I think he was assuming some significant capability by the mid-90s against SU ICBMs in their mid-course and terminal phases, though not against boost-phase. Check.) This would include newly designed attack subs (SSN-21? Seawolf) to go after their Typhoons in their bastions, via and under the Arctic icepacks.

Thus, Pike thinks that what Perle wants--which is what the Soviets fear--is a realistic prospect. It would amount to a decade or so of a dramatic asymmetry, strategic superiority, favoring the US, before the Soviets could effectively cancel it out. (Perle, et al, would hope for longer, of course; but they might regard even a decade or a decade and a half as worth the cost: assuming an Administration--like Reagan's, supposedly--that would have the political will to exploit this superiority in nuclear diplomacy. Reagan, to be sure, has been cautious in actual confrontations in a way that his right-wing supporters compare critically to Carter's behavior. But he has not had the benefit of the superiority that Weinberger and Perle propose to bequeath to his successors. His predecessors who did have such a superiority, on the other hand, lacked the guts to use it

appropriately, in the eyes of the "NUTs" (nuclear utilization theorists, like Colin Gray and Perle). Given another Reagan...

The Soviets are concerned, Pike believes, that what may come about is a replay of the period of past Soviet inferiority, with 1995 = 1950, with a year by year correspondence for about 10 years. [15 years would better correspond to the past interval. Or would it make more sense to equate 1995 to 1955, and say 10 years?]

They would give a lot to avoid this: and the cost and effort of catching up, as they would do eventually, though even then, as the Soviet scientists point, the "balance" would be restored at a level permanently less stable, less calculable and predictable, with deterrence less assured, more fragile, than at present.

Gorbachev's new proposals already show how much they are willing to offer to preclude this replay of history, in a new and more dangerous era. They don't expect to eliminate SDI basic research; but the sorts of things they seem to contemplate would add up "only" to \$200-300 billion. Pike thinks they would put the whole Gorbachev proposal into effect--actually start destroying strategic weapons (toward a 50% reduction) and intermediate range weapons (toward zero)--if Star Wars funding were cut down to \$.5 billion or \$1 billion, if Star Wars tests were precluded, and if Reagan were to reaffirm the ABM Treaty.

That is, Pike thinks the Soviets would not delay implementation of Phase I of their program even though a subsequent US administration might not feel bound by Reagan's commitments. (I had speculated that the Soviets might not be willing actually to destroy any strategic weapons until they got a commitment from the next administration; even so, I suggested, they might be willing to start implementing the "zero option" for intermediate range missiles if they got sufficiently promising restrictions on Star Wars from Congress and the Administration. But Pike thought if they could get the above measures, "Gorbachev would deliver the whole package." He would take his chances with the post-Reagan administration.)

That sounds great: especially considering that these measures could, in principle, be enacted by Congress even without Presidential agreement. But the catch is, Pike thinks, that there is close to no hope that Reagan will meet these conditions. And although Reagan won't get all the money he asks for, nor all the tests, Congress simply won't oppose this President, on an issue of "national security" (and "bargaining strategy"), to the extent of meeting the Soviets' minimal requirements for carrying out their proposal.

SDI funding will not be permitted by Reagan, nor forced by Congress, to drop near \$1B. Nor will Congress force a warhead test ban on Reagan, even though, Pike says, polling data indicates that this is the most popular single arms control measure. (Ref?)

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Right now, a CTB would stop the X-ray laser, which would be extremely worthwhile. But Pike says that though the XRL is now being tested at 50-100 KT (actually, it seems, about 75 KT), he fears that in a few years they will reduce the necessary test yield to 1 KT or less, below the verification threshold of a CTB, so that a test ban delayed till 1989 (which seems the earliest imaginable) will not stop the XRL (or, of course, any of the currently programmed new counterforce weapons).

All this means is that there is very, very little chance of the Gorbachev program being enacted under Reagan. We can and must work now and throughout the next three years to keep such possibilities open for Reagan's successor. As Pike puts it, the questions are:

1. Will Gorbachev's offer still be open in 1989? (Will he be alive and in power? Will he have changed his mind?)
2. Will the ABM Treaty still be viable in 1989?
3. Will the momentum of the "jobs program" associated with SDI (and the new offensive systems) be stoppable in 1989?

On the first point, Pike's judgment is hopeful. He doesn't expect the Soviets to initiate any actions or reactions that will preclude a deal under the next President, almost whatever Reagan does. They will not, for example, commit themselves to an offensive buildup, before they have to (which they don't, under Reagan). Here the Gorbachev proposals are a hopeful indication.

Preserving the ABM Treaty against Perle and Weinberger will be a close thing, but there is a good chance of achieving it. (Halperin agrees with this, and points especially to the ASAT ban, and to the extraordinary support he has so far rounded up for the "Committee to Preserve the ABM Treaty," including two former Presidents and every living previous Secretary of Defense except Rumsfeld: McNamara, Brown, Laird, Schlesinger!) "There is a fair chance that he won't get treaty-busting testing."

As for momentum, that too will be a close thing. Pike thinks that "D5 is already out of the bag; it can't be stopped in 1989." I have encountered no one in Washington who thinks otherwise. On the other hand, I'm not sure they are considering adequately the possibility of a bilateral deal that banned it, pressed effectively by the Soviets. (So far they have hardly targeted a D5 ban at all as an arms control objective). And there is already some significant sentiment on the Hill for putting a firm ceiling on D5 deployment levels, or combined D5/MX deployment (even without a bilateral deal), that would be short of full first-strike coverage of Soviet ICBMs.

But spending on Star Wars research will probably have reached a \$4 billion annual level by the time of a new administration. That pressure to continue will be great, though not unstoppable. What is more ominous is that the program will have reached the stage of a number of ground-based tests. These may not clearly

violate the ABM Treaty (being ground-based, although there will be argument about their intent: whether they aim at territorial defense, which is forbidden, or a point defense, which is permitted). Moreover, they will be politically very tempting, as a "compromise" that keeps the program going, on the grounds that they will serve point defense of missile silos and command and control, and thus be "stabilizing." This will be argued even though some of these tests will involve late mid-course interception, and thus have some regional defense capability. They involve mainly kinetic kill mechanisms (though they may also involve ground-based lasers, perhaps including XRLs for mid-course discrimination and destruction of decoys).

Indeed, Pike thinks that these tests are probably "not stoppable," even under a Democratic President. Which is not to say that they are not very dangerous, in terms of the further momentum they will impart, and their erosion of the ABM Treaty in the eyes of the Soviets.

Our basic arms control objective, as Pike sees it, is to get a Democratic President who will essentially accept the Gorbachev proposals, or something close to them. A Republican administration, he thinks (given the current momentum, even without Reagan's messianic commitment to a perfect defense) would endorse Perle's whole damage-limitation program. But a traditional Democrat would probably do much the same! A Mondale (or a Carter, as we saw in 1979-80) would not resist these domestic pressures; nor, probably, would Hart, given his indicated views. And a Democrat who wanted, more than any of these, to end the arms race bilaterally would have to move fast, probably vetoing the ground-based tests that would be all ready to go, as well as instituting moratoriums on warhead testing and on deployments very early in his first year.

To achieve such a President in 1989 would take a lot of work and luck. Yet Pike thinks (in the presence of Gorbachev's approach, and the public-Congressional mood) that there is "a 45% chance" (i.e., a little less than even) of achieving it! Those are the best odds I remember facing.

Such a prediction would hardly have sounded realistic to me in November, when I was ready to judge, privately, that there was no visible or foreseeable basis for expecting an end to the arms race at all. But the Congressional ban on ASAT (which Mort Halperin says was foreseeable to insiders, even though it was necessary, disgustingly, to compromise at least temporarily on nerve gas production in the House to achieve it) and above all, the flexibility and determination shown in the Gorbachev proposals, gives some substance to it.

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He felt that this would be an important article, which I should write. He thought that an op-ed piece would not provide enough space, nor would a letter (e.g. to Science), since he thought it should be spelled out thoroughly, and put in the context of a larger analysis. (The larger context could be, for example, a discussion of the point I raised in my trial in Beatty: "Ronald Reagan, who likes to delegate, is probably not aware that nearly every strategic program he is promoting will encourage one or both sides to delegate the decision to launch World War III to an electronic computer." This referred, in my mind, to Pershing II, MX, ASAT, and Trident II. But it definitely includes the SDI, and specifically the X-Ray laser.)

Pike thought that even the Bulletin of Atomic Scientists would not provide enough space; better would be Foreign Policy, International Security. He suggested that I run a draft by him.

3. Similar problems arose with ground-based interceptors in the U.S. (For boost phase? Does this refer to non-XRL lasers using space-based mirrors??)

4. XRLs have at least three uses, of which boost-phase intercept is actually the least promising. The others are:

a) ASAT, and defense suppression. (I presume the ASAT role could be done either from the ground or space.)

b) interaction with mid-course objects: "popping balloons." "XRL has great potential for mid-course discrimination--popping balloons." (Again: from the ground? Or also from space? And what would then be the kill mechanism for

the warheads, once the balloons have been popped?)

c) boost-phase intercept. Liquid-fueled SU ICBMs with 300 second boost phase are somewhat vulnerable to this; but solid-fuel missiles, with 180 second burn time are less so, and fast-boost rockets (maybe 40 seconds, according to the Soviets) not at all.

5. How many targets could a single XRL (nuclear burst) seek to destroy? Where the public literature mainly suggests "many," one for each of the lasing rods, Kosta Tsipis asserted "only one," since it would be necessary to point many rods, a whole bundle, at a single booster in order to get a kill. Pike says: This is unclear, in open discussion; and probably there is still great uncertainty about it, reflecting uncertainty on the brightness and focussing, etc. of the laser. (As well, I suppose, as uncertainties about the problem of independent pointing of the rods?)

6. I suggested that the launching of a single XRL would give away the position of the submarine. The discussion in Broad suggests that Trident subs would be used; presumably they would also have offensive missiles (Trident II) on them as well. Thus they would have an incentive to launch these missiles, for damage-limiting purposes and so as to "use them before losing them," as soon as the XRLs were launched (which might mean, automatically, on the basis of a false alarm).

But Pike thought it unlikely that Tridents would be used, since the rockets for launching XRLs would be smaller than offensive missiles. It would be desirable to use smaller subs, or else refit Tridents to allow more tubes; probably the sub would have only XRLs. (This doesn't seem inevitable, though). A new sub, "George Washington type" might be developed.

7. Another way in which SDI would introduce instabilities of the sort I conjectured would be with "mistaken" activation of "shoot-back" systems, i.e., active defenses of the space-based defenses themselves.

Such problems would be multiplied if and when the Soviets introduced similar systems themselves. One side going on a higher state of alert--based either on "strategic warning" (or in order to "send a signal," as alerts were used in the past, e.g. 1973) or on warning indications that were possibly erroneous--the other would react automatically. And either the first alert or the response could be misinterpreted by the opponent or its systems, which would be programmed to respond automatically. (Plenty of room here for the operation of the "bugs" that are guaranteed to be numerous on both sides: indeed, for the "mating" of bugs of different species and nationalities!)

8. Pike is concerned about the reduction of stability that will ensue from the interaction of US and SU "macrosystems" (as the Soviet scientists call them) incorporating both offense and

defense. (The Soviet scientists--whose report I did not discuss with Pike--imply that the Soviets will rely on relatively cheap countermeasures rather than imitating an American SDI. This projection is probably unreliable. But even if it is the case, Pike's point below would still be valid; all the more if the Soviets do have a complex SDI integrated with their offenses.)

"These two systems, US and Soviet, will be far more tightly coupled than at present. Now, they are relatively loosely coupled (though there is already, and has been for some time, possibilities for false alarms and for alerts having a "self-confirming" consequence. Khrushchev spoke to JFK about this in the early '60's, referring among other things to the mistaken flyover of Soviet territory by a SAC U2 during the Cuban Missile Crisis. ((And see my story on Cuba II)). a) There is imperfect knowledge of what the other is doing (i.e., only limited data comes in on this, especially in "real-time.") b) Time available for interpretation and response is short, but not as short as it will become. c) There is provision at many levels for human interpretation, participation in decision, possible override.

With these new systems, the time available for response will be so short (especially where there is great reliance on boost-phase and mid-course intercept: as with XRL) that humans will be entirely cut out of the SDI decisions. (And, as both Pike and I argue, this will probably feed into fast, and probably automated, commitment of offensive "damage-limiting" responses as well). Meanwhile, reflecting both "modernized" capabilities and increased pressure on fast response and on damage-limiting, "Each side will be watching the other very closely". I.e., its non-human systems will be doing so ("My machine will call your machine," as they say in Hollywood) as well as human operators--all in "real time" and tied in to both automated and human decision-making geared to extremely fast response (not allowing much time for checking, reflection, consultation, even where humans are part of the process at all.

In effect, the two macro-systems will be observing each other with the super-vigilance, alertness, and readiness to respond of paranoiacs. [Note the point made by the Soviet scientists, too, in the above-mentioned report, "Space-Strike Arms and International Security," Report of the Committee of Soviet Scientists for Peace, Against the Nuclear Threat: The battle management of the SDI must be an "expert system" of "an immense scope, i.e., an artificial-brain system incorporating expert knowledge and assessment of the military-political situation and the possible ways of its development" (Presumably this is in order to set alert levels, or to activate the system.) But "it should be borne in mind that such an expert system, and consequently, the predominant logic of the subsystem of battle management functioning, will be, above all, the produce of the mentality and thinking of the top military leaders and experts in military-political, strategic, operational and technical problems, who will be directly involved in the work on this system.

"The supporters of the 'strategic defense initiative' are, first of all, such representatives of the military, academic and political circles in the USA who cling to extremely negative, even paranoid, notions of the Soviet Union's intentions and who are overanxious to use military force in conflict situations."

"Since a wide-scale anti-missile system with outer space echelons is most likely to function in maximally autonomous conditions and its principal decisions on its activation and the use of particular types of weapons will be made within a few minutes the above-mentioned characteristics of its artificial brain may play a fatal role in some situations." (p. 34)

In other words, the Soviets believe that such systems require programming for the incorporation into automated decision-making of strategic political factors--"It will be necessary to have as a minimum a reflective model of the perception of the military-political and military-strategic situation by the adversary, and also a model of the adversary's military-political decision-making" (p. 33)--and that this programming will be done in the U.S. by humans who on the whole are advocates of the SDI, i.e., as it happens, humans with the psychology and politics of Lyndon LaRouche.]

9. The Reagan Administration sees the SDI as part of a general enhancement of damage-limiting capability. Thus, it is to be programmed along with and integrated operationally with such damage-limiting functions as preemptive offensive counterforce systems and with strategic anti-submarine warfare.

Ikle, who is the key promoter of all this (along with Perle) has instituted programs for integrating the C3 aspects of damage-limiting in general: the Have-Temp program for offenses and the Master program for defense, both to be integrated together.

Pike's greatest fears relate to the period when the Soviets do the same thing.

10. The Reagan Administration emphasis on SDI reflects the overall interest in damage-limiting. I.e., the main emphasis, so far as the Pentagon is concerned, is not on a "perfect shield that would make nuclear weapons obsolete" but on complementing nuclear offensive systems for purposes of damage-limiting, not only for "insurance" but for enhancing the credibility of first-strike threats: and enhancing the will of future Presidents to make and maintain such threats. (Interest in point defense, purely for enhancing deterrence based on retaliation by land-based systems, is very secondary). These aims are achieved by an SDI of almost whatever level of effectiveness (i.e., in defending territory, not merely point defense).

The new emphasis on damage-limiting--reflected both in the SDI and in counterforce offensive programs and programs for "decapitating" attacks on Soviet C3, including ASAT--reflects in

turn a disillusionment with the potential effectiveness both in warfare and in "nuclear diplomacy" of the concepts of "limited attacks," or of decapitation by itself, that were popular in the Pentagon in the '70's. The notion of selective "coercive" attacks--exemplified by "Nitze's nightmare" of a Soviet aimed only at US ICBMs, avoiding cities and US C3, and neutralizing retaliation by US SLBMs by threatening city-busting attacks with Soviet reserve forces--has been discredited by analyses of the fragility of command and control on both sides and the difficulty of separating military and civilian target systems. Moreover, the Soviets have never shown any belief in the feasibility or sense of such an approach and have made no preparations for it (which would be necessary).

This means not only that it is not to be expected from the Soviets but that it makes little sense for the US (which was clearly Nitze's main interest in it; though projecting it onto the Soviets, against all evidence of their doctrine or preparations, was a useful way to scare the American public and elites into financing a buildup intended to implement this strategy, as a threat of US preemption, on the US side.

If, then, the threat of US preemption (or escalation to a first-strike) is to be maintained, it cannot be on preparations for or threats of "clever" coercive attacks that rely for damage-limiting on "intrawar deterrence" by US reserve forces. Moreover, Pike says, there was in the '70's actually some hope that decapitation could do the damage-limiting job by itself; i.e., that it might totally paralyze response. (This seems to be held out as a possibility by Blair, in "Strategic Command and Control." Does he really believe this?) But there is now despair on this point.

Schlesinger, under Nixon and Ford, and then the Carter people (among whom Schlesinger was still represented, in DOE) tried to regain escalation dominance by planning limited attacks, and by flexible targetting, along with decapitation. This was reflected in NSDM-242 and PD-59, with menus of selective target systems. Schlesinger still believes "war-winning" is "crazy"; but he still, apparently, believes in the usefulness of limited attacks. The Reagan team no longer does so, says Pike.

This leaves "brute force" damage-limiting, fully in line with the approach the JCS and SAC have always favored. (See the comparable position of the JCS on Vietnam, opposing civilian notions of "coercing" Hanoi by gradual pressure and by withheld forces and targets, favoring instead an immediate massive attack on all targets). The role of decapitation, I suspect, would be seen as crucial still, not to paralyze response but to delay it and disorganize it, thus making it much easier, or feasible, to do the damage-limiting job with counterforce offensive systems and with SDI.

I recall, after all, Andy Marshall's and Bill Kaufmann's notions in 1960 of using such "slow, but accurate" systems as the B-70 as "hunter-killer" agents that would find and destroy Soviet concealed or hardened ICBMs that had not been found or destroyed

by US preemptive missile attacks. The "slow but accurate" cruise missiles would seem perfectly suited for such a role today, i.e. as part of a first-strike preemptive attack! Their effectiveness would depend on prior "pin-down" of Soviet missiles by US ICBMs and the effects of "decapitation" attacks on Soviet C3. Many SDI components, including the XRL, would contribute directly to the

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latter.

I can easily imagine (especially after Pike's exposition above) such thinking in the Pentagon today. (Marshall, after all, is in a key position there now). The B-70 itself is back, in the form of the B-1 and Stealth, along with cruise missiles, both ALCMs, GLCMs and SLCMs. If Soviet decapitation operates on US centralized command before these air-breathing systems reach Soviet territory, presumably they will be prepared to do their damage-limiting hunter-killer work on their own: "Headless Huntsmen."

Whatever the counterforce systems miss, both in their initial attacks and in continuing "war-fighting" attacks, the various layers of the SDI are intended to pick up and destroy. Decapitation will greatly assist this, just as it will crucially assist the ability of counterforce systems to destroy Soviet forces in their "pre-boost" phase.

Ultimately, of course, provisions for civil defense must be part of this strategy. The Reagan team has always recognized this, long before coming to office (as did the Committee for Present Danger in general), just as it has always favored ABM and opposed the ABM Treaty (not only for its general arms control effects). But early moves by Reagan to enhance civil defense were costly politically--remember T.K. Jones?--and were rebuffed. They were perhaps the only programs--crisis relocation, stocking of hospitals, and others--that were actually blocked by the antinuclear movement, both local groups and PSR (and likewise in Britain: "Protest and Survive" as the answer to "Protect and Survive"). It is clearly necessary politically to postpone these dispersed measures involving widespread civil government and civilian participation until a later stage: presumably after the SDI is in place. But then it can be expected.

I could never make sense out of the Colin Gray and Carter team apparent notion that decapitation alone could be a basis for damage-limiting or for first-strike threats. How could you be sure that the other side would be totally paralysed? What if they allowed for decentralized execution of retaliation, as we did? And how, then, would the war ever be ended? Wouldn't decapitation simply assure that all the surviving forces on both sides would be fired eventually, probably at cities? These were the challenges I made to the JCS in 1961, when I opposed SAC plans to destroy Moscow with high reliability at the outset of any general war. (Suppose we had used the atom bomb on Tokyo--as Groves wanted to do, both before and after Hiroshima--instead of Hiroshima, or after it, I used to point out to Air Staff officers. There would have been no one to order a Japanese surrender. We would have been fighting Japanese troops for years. Now, in the equivalent situation, those "headless" units would be armed with nuclear weapons.)

But the current answer to this critique of decapitation--or

of preemption in general, since decapitation turns out to be almost unavoidable, given the fragility of command and control--is that every effort will be made, with the help of modernized counterforce weapons, to destroy the opponent's retaliatory forces, and those that survive these attacks will be destroyed in their boost-phase, mid-course or terminal phase by SDI, both efforts being aided by the initial attacks on Soviet C3. We are to survive and "prevail" without any reliance on Soviet "surrender," which will not be feasible.

It is this concept that accounts for the fact that Reagan, despite his supposed aim of making nuclear weapons obsolete and, by sharing the SDI, will preclude first-strike threats or capability on either side, is in fact programming first-strike and decapitating weapons like mad. (sic). If he were fixed only on the SDI as a grand dream, he could possibly make it acceptable to the Soviets and compatible with arms control agreements, by foregoing his buildup of counterforce offensive forces. (The Soviet scientists indicate this on p. 47 of their report, saying that claims that the SDI can contribute to stability "might have some weight only if" he did so.)

(See my comments on D5, Kamanev file. Would SDI be all right without D5?? Key question on stability: Is SDI and decapitation robust against Soviet retaliation? (Obviously it is not against Soviet preemption). In other words, can SDI survive on either side, whoever strikes first? Perhaps it can, on the attacker's side; that must be the Pentagon's hope.) Can one still aim at stopping D5 by mutual deal?